

PEARSON, J.

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF OHIO
EASTERN DIVISION

<i>IN RE: EAST PALESTINE TRAIN</i>)	CASE NO. 4:23-CV-00242
<i>DERAILMENT</i>)	
)	JUDGE BENITA Y. PEARSON
)	
)	<u>ORDER</u>
)	[Resolving ECF No. 628]

Pending is Third-Party Plaintiffs Norfolk Southern Corporation and Norfolk Southern Railway Company's (collectively "Norfolk Southern") Motion to Exclude the Opinion of Dr. Georges Melhem. [ECF No. 628](#). Third-Party Defendant OxyVinyls LP ("OxyVinyls") responded in opposition. [ECF No. 668](#). Norfolk Southern replied. [ECF No. 704](#). The Court has been advised, having reviewed the record, the parties' briefs, the applicable law. For reasons set forth below, the Court grants Norfolk Southern's Motion to Exclude ([ECF No. 628](#)).

I. Background

"Norfolk Southern Train 32N derailed at 8:54 pm on February 3, 2023, in East Palestine, Ohio. At the time of the derailment, Train 32N was traveling east on Main Track 1 along Norfolk Southern's Fort Wayne Line and consisted of two lead locomotives, one distributed power unit, and 149 rail cars." *See* Notice of Stipulation Regarding Uncontested Facts, [ECF No. 585 at PageID #: 17601, ¶ 1](#). "In total, 38 cars derailed." [ECF No. 585 at PageID #: 17601, ¶ 2](#). Five of these cars contained Vinyl Chloride Monomer ("VCM"), which is considered hazardous and flammable. *See* [ECF No. 585-1 at #17609](#). OxyVinyls was the shipper of all five cars

(4:23CV242)

containing VCM and owned three of them. [ECF No. 119 at PageID #: 1412, ¶ 6](#); *see also* [ECF No. 740 at PageID #: 52005, ¶ 5](#).

Norfolk Southern settled with Plaintiffs represented in the Consolidated Class Action Complaint. Order Granting Final Approval of Settlement, [ECF No. 557](#). Norfolk Southern also lodged a Third-Party Complaint seeking derivative damages under theories of negligence and joint and several liability against certain railcar owners: OxyVinyls LP, GATX Corporation, General American Marks Company, and Trinity Industries Leasing Company.¹ *See* Third-Party Compl., [ECF No. 119](#).

Norfolk Southern alleges that OxyVinyls was negligent in connection with its shipment of the five tank cars containing VCM by, in part, failing to provide accurate information on the hazard VCM could present. [ECF No. 119 at PageID #: 1440–43](#). OxyVinyls’ Safety Data Sheet (“SDS”) warned that air, sunlight, excessive heat, oxidizers, catalytic metals such as copper, aluminum, and their alloys, and certain catalytic impurities could result in explosive or violent polymerization. [ECF No. 119 at PageID 1441–44 ¶¶ 69](#). Norfolk Southern also alleges that OxyVinyls’ representatives made conflicting statements on the ability of vinyl chloride to polymerize, offered inconsistent warnings regarding polymerization, and stated that polymerization was not possible under the derailment conditions despite the vinyl chloride having been exposed to extreme conditions. [ECF No. 119 at PageID #: 1442, ¶ 168](#). Norfolk Southern further alleges that the tank cars in which OxyVinyls shipped VCM had aluminum

¹ The Court dropped Trinity Industries Leasing Company as a Third-party Defendant with prejudice under [Fed. R. Civ. P. 21](#) for the reasons stated in the Unopposed Motion of Third-party Plaintiffs Norfolk Southern Corporation and Norfolk Southern Railway Company and Trinity ([ECF No. 460](#)). *See* Order ([ECF No. 464](#)).

(4:23CV242)

components in the pressure release devices and in other components on each of the cars shipping VCM. [ECF No. 119 at PageID #: 1442, ¶ 167.](#)

Norfolk Southern alleges that “[t]he vent and burn and release of hazardous vinyl chloride was the direct result of the improper shipping containers and Oxy Vinyls’ failure to follow federal regulations and its own SDS.” [ECF No. 119 at PageID #: 1442, ¶ 172.](#)

OxyVinyls retained Dr. Georges Melhem, an expert in chemical engineering and pressure relief design. Norfolk Southern seeks to exclude Dr. Melhem’s opinion.

II. Legal Standard

The Federal Rules of Evidence, and specifically [Rule 702](#), “assign to the trial judge the task of ensuring that an expert’s testimony both rests on a reliable foundation and is relevant to the task at hand.” [Daubert v. Merrell Dow Pharm., Inc., 509 U.S. 579, 597 \(1993\).](#) [Rule 702](#) governs the admissibility of expert testimony and codifies the Supreme Court’s holdings in *Daubert* and [Kumho Tire Co. v. Carmichael, 526 U.S. 137 \(1999\).](#) Expert testimony is admissible only if (1) the testimony is based on sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the expert has reliably applied the principles and methods to the facts of the case. [FED. R. EVID. 702.](#) In [United States v. Lang, 717 Fed.Appx. 523 \(6th Cir. 2017\),](#) the Sixth Circuit held that an expert opinion is reliable when it rests on a “*sufficient*” factual basis and is not “plainly contradict[ed]” by the record. [Id.](#) at 536 (emphasis in original). The proponent of the expert testimony has the burden of establishing by a preponderance of the evidence that the proposed testimony satisfies those standards. See [FED. R. EVID. 702 advisory committee’s note \(2000\); Daubert, 509 U.S. at 592 n.10.](#) Expert testimony is not admissible “is the exception rather than the rule.” [In re Scrap Metal Antitrust](#)

(4:23CV242)

[Litig.](#), 527 F.3d 517, 530 (6th Cir. 2008) (quoting [FED. R. EVID. 702 advisory committee's note \(2000\)](#)).

Furthermore, a *Daubert* analysis includes consideration of [Fed. R. Evid. 403](#). *Id.*, at 595. Therefore, courts in the Sixth Circuit employ a four-prong test to determine the admissibility of expert opinions: “(1) that the witness, a qualified expert, (2) was testifying to a proper subject, (3) which conformed to a generally accepted explanatory theory, and (4) the probative value of the testimony outweighed its prejudicial effect.” [United States v. Smithers](#), 212 F.3d 306, 312 (6th Cir. 2000) (citing [United States v. Green](#), 548 F.2d 1261 (6th Cir.1977)).

III. Analysis

A. Qualifications have not been questioned and will not be addressed.

Norfolk Southern does not raise an issue as to Dr. Melhem’s qualifications. [ECF No. 628-1](#). Indeed, Dr. Melhem’s qualifications are extensive. *Dr. Melhem’s Curriculum Vitae*, [ECF No. 628-3 at PageID #: 37482–500](#). The Court will not address Dr. Melhem’s qualifications any further.

B. Dr. Melhem’s opinion lacks a sufficient factual basis.

Norfolk Southern argues:

It should go without saying that an expert needs to support their opinions. Put another way, exclusion is warranted where an expert opinion “is connected to existing data only the *ipse dixit* of the expert. A court may conclude there is simply too great an analytical gap between the data and the opinion proffered.” *Gen. Elec. Co. v. Joiner*, 522 U.S. 136, 146 (1997). Dr. Melhem defaults on this fundamental requirement. As his report shows, and his deposition underscored, Dr. Melhem fails to draw any meaningful connection between his “simulations” and the opinion he proffers beyond his own say-so. Dr. Melhem never provided the necessary software, but even if he had, it would not have cured his failure to explain how he tested his hypotheses to arrive at his opinion, including which simulations or record evidence support each prong of his analysis

(4:23CV242)

and why. These deficiencies render his report unsupported and therefore unreliable.

[ECF No. 704, at PageID #: 51345–46.](#)

In further support of its position, Norfolk Southern points to the lack of specific citations throughout his report and Dr. Melhem’s continued reference generally to Appendix B, the listing of all the simulations he ran, rather than anything more specific. [ECF No. 628-1 at PageID #: 37450.](#)

In response, OxyVinyls asserts that Dr. Melhem’s opinion is based on good grounds and supported by many dynamic simulations which test and support Dr. Melhem’s hypotheses. *See* [ECF No. 668 at PageID #: 46386.](#) OxyVinyls points to the wide acceptance and recognition of Dr. Melhem’s simulation software, SuperChems Expert, as well as the fact that Dr. Melhem produced the project files which were used to run his simulations. *Id.* OxyVinyls also asserts that Dr. Melhem’s conclusions are supported by the simulations because the simulations considered “flow dynamics, relief dynamics and operation of the pressure relief valves, time histories of flow, time histories of temperatures, time histories of pressure, thermal radiation, and runaway reaction dynamics,” as well as an explanation of how the railcars carrying were modeled. [ECF No. 668 at PageID #: 46387](#) and *Melhem’s Expert Report*, [ECF No. 628-3 at 37472, 37474.](#) Dr. Melhem further identifies the equations used, and that the simulations are based on the “‘laws of physics,’ which ‘don’t lie.’” [ECF No. 668 at PageID #: 46388](#) (citing [ECF No. 628-4 at PageID #: 37570, 37623](#)).

OxyVinyls’ response misses the mark. Even if the reliability of the software were assumed, there is no way for the Court to understand how the data and simulations reliably support Dr. Melhem’s opinion. “[C]onclusions and methodology are not entirely distinct from one another. Trained experts commonly extrapolate from existing data. But nothing in either

(4:23CV242)

Daubert or the Federal Rules of Evidence requires a district court to admit opinion evidence that is connected to existing data only by the *ipse dixit* of the expert.” [Gen. Elec. Co. v. Joiner, 522 U.S. 136, 146 \(1997\)](#). “A court may conclude that there is simply too great an analytical gap between the data and the opinion offered.” *Id.*, (citing [Turpin v. Merrell Dow Pharma., Inc., 959 F.2d 1349, 1360 \(6th Cir. 1992\)](#)). To support his opinion, Dr. Melhem offers *his word* that his opinion is supported by reliable methodology and relevant facts in the form of an unexplained “listing and summary of the simulations” he conducted. *See Exhibit B*, [ECF No. 628-3 at PageID #: 37501–02](#). The explanation of his methodology is limited to the objective of the simulations. [ECF No. 628-3 at Page ID #: 37473](#) (offering “[t]he primary objective of the numerous simulations was to confirm and/or rule out likely scenarios associated with the VCM containing rail cars, including but not limited to flow dynamics, relief dynamics and operation of the pressure relief valves, time histories of flow, time histories of temperatures, time histories of pressure, thermal radiation, and runaway reaction dynamics. The other details of the simulations as well as simulation project files are described in Appendix B.”) These generalities are insufficient to explain how Dr. Melhem’s reached the conclusion that “[t]he pressure relief valves operated as designed and functioned properly as intended.” [ECF No. 628-3 at PageID #: 37474, 37501–02](#).

At his deposition, Dr. Melhem failed to add clarity. He testified that each project file of the simulation included a “small database” of “all the inputs, all the outputs, all the simulations, conditions, materials and factual information” but that is not information available to the Court or otherwise explained in Dr. Melhem’s report. Tr. of Georges Melhem’s Dep., [ECF No. 628-4 at PageID #: 37559, 55:12–55:19](#). He also testified that the simulations “test[ed] specific hypothesis and specific conditions and tr[ied] to assess what the outcome would be, and all of

(4:23CV242)

that was considered in forming [his] opinion.” [ECF No. 628-4 at PageID #: 37570, 66:20–66:25](#).

Ultimately, Dr. Melhem obfuscated rather than answer directly questions about the facts and methodology that led to his opinion. *See e.g.*, [ECF No. 628-4 at Page ID #: 37599, 96:5–96:6](#) (“And that is actually implicit in all the simulations.”); [PageID #: 37608, 105:11–105:12](#) (“It’s self-evident, and it should be reasonably self-evident to a jury[.]”); [PageID #: 37623, 121:4–121:5](#) (“And then the laws of physics that, you know, are the laws of physics.”).

It is the job of the expert to explain how he reached his opinion, on which methodology and facts he relied. “[I]t is not for the court to search the records and construct argument.” [Brenay v. Schartow, 709 F. App’x 331, 337 \(6th Cir. 2017\)](#) (citing [Magnum Towing & Recovery v. City of Toledo, 287 F. App’x 442, 449 \(6th Cir. 2008\)](#)). Regardless of his qualifications, Dr. Melham fails to provide proper explanation of his methodology and facts used to reach his opinion, the Court finds Dr. Melhem’s opinion is not reliable and, thus, inadmissible. [FED. R. EVID. 702](#). *See also* [Lang, 717 Fed.Appx. at 536](#) (finding an opinion must be supported by sufficient facts and not plainly contradict undisputed evidence).

IV. Conclusion

Accordingly, Norfolk Southern’s Motion to Exclude ([ECF No. 628](#)) is granted in its entirety. Dr. Melhem and his opinion are excluded.

IT IS SO ORDERED.

January 29, 2025

Date

/s/ Benita Y. Pearson

Benita Y. Pearson
United States District Judge